SECTION 4
Manure and Wastewater Handling and Storage Component

This report was prepared based on spreadsheets that calculate manure and wastewater production for this operation. Spreadsheet calculations are included at the end of this section.

Existing Facility Description

(Description only of existing)
Cold Springs Farm cattle feeding and backgrounding operation is composed of the Brick House and Stone House areas.

Brick House location

The Brick House location of Cold Springs Farm currently averages 2300 head of beef cattle with a capacity for 2380 head. The cattle housed in the brick house area are currently penned in seven different lot arrangements: Brick House concrete lots 1-4, the 50s, 60s, 100s, 200s, 400s, and Temporary pens 1 - 4.

	Animal	Animal Numbers		Animal Weights	
Lot's	Type	Average	Capacity	AVG	Finish
Brick House Lots	Beef Feeder	548	560	1000	1200
50's	Beef Feeder	280	300	1000	1200
60's	Beef Feeder	452	480	1000	1200
100'S	Beef Feeder	525	560	1000	1200
200'S	Beef Feeder	364	320	1000	1200
400'S	Beef Feeder	131	160	1000	1200
Temporary Pens 1-4	Beef Feeder	0	0	0	0
Total		2300	2380		

E7A-D (Brick House Concrete Lots 1-4)
The Brick House lots 1-4 are concrete surfaced and each have dimensions 140' x 60'. An additional 60' x 60' portion at the north end of each lot is roofed. The uncovered portions of the lots have concrete curbing that prevents manure runoff. Each of the lots have wall openings that are connected to a concrete scrape alley. The scrape alley flows to the settling basin E19 south of the lots. The concrete settling basin has dimensions 190' x 30' x 4' deep with an inside 10:1 ramp and serves as a runoff and sediment control structure for runoff from the concrete lots. The liquid from settling basin E19 is transferred via gravity flow sewer pipe to earthen storage pond E10. The concrete lots are scraped and hauled on a weekly basis.

E5A-E (50s Lots)
Lots 51-54 are earthen, each with dimensions of 240' x 50'. A feed drive runs along the east side of the lots. The manure transfer alley lies to the west of the

earthen lots. Runoff from these lots is collected in earthen storage pond E13. The lots are scraped and hauled between groups.

E6A-D (60s Lots)
Lots 61-64 are earthen with dimensions 290' x 190', 265' x 180', 240' x 180', and 220' x 190' respectively. A feed drive runs along the west side of the pens and a manure transfer alley along the east side. Runoff from these lots is collected in earthen storage ponds E14 and E15. The lots are scraped and hauled between groups.

E1A-H (100s Lots)
Lots 111 -119 are earthen, each with dimensions 240' x 50'. There are four pens on each side of a center feed drive. There are manure transfer alleys at the north and south ends of the lots. Runoff from these lots is collected in earthen storage ponds E11 and E12. The lots are scraped and hauled between groups.

E2A-D (200s Lots)
Lots 201 - 204 are pasture paddocks with dimensions 630' x 480', 580' x 540', 640' x 550', and 1050' x 560' respectively. A feed drive runs along the west side of the paddocks. Runoff from these paddocks is not detained. The 200s lots are not scraped or hauled.

E4A-B (400s Lots)
Lot 4012 is the combination of lots 401 and 402. The earthen lot has dimensions 500' x 250'. A feed drive lies on the east side of the pen and a manure transfer alley lies on the west side. Runoff from these lots is not detained. The lots are scraped and hauled between groups.

E8A-B (Temporary Pens 1 & 2)
(E8A: 80' x 50'and E8B: 80' x 50'). These concrete lots have concrete curbing to prevent manure runoff as well as an opening on the north end that is connected to the scrape alley. The scrape alley connects to a gravity flow sewer pipe at the northwest corner of temporary pen 1 and flows to earthen storage basin E10. There is no runoff/sediment control structure for the runoff from these concrete lots. The concrete lots are scraped and hauled on an as needed basis.

E8C (Temporary Pens 3 & 4)
(E8C: 200' x 70'). These earthen lots have earthen diversions to prevent manure runoff and drain south to a scrape alley along the north side of E8A& E8B. The scrape alley connects to a gravity flow sewer pipe at the northwest corner of temporary pen 1 and flows to earthen storage basin E10. There is no runoff/sediment control structure for the runoff from these earthen lots. The earthen lots are scraped and hauled on an as needed basis.

Stone House location

The Stone House location of Cold Springs Farm currently averages 570 head of beef cattle with a capacity of 625 head. The cattle housed in the Stone House area are currently divided amongst two penning lot arrangements: Stone House concrete lots 5, 6, 8, and 9 as well as the 300s.

	Animal	Animal Numbers		Animal Weights	
Lot's	Type	Average	Capacity	AVG	Finish
Stone House lots	Beef Feeder	448	490	1000	1200
300'S	Beef Feeder	122	135	1000	1200
Total		570	625		

E9A-H (Stone House Concrete Lots: 5, 6, 8, and 9)

The Stone House lots 5,6,8,9 are concrete surfaced and each have dimensions 200' x 50'. An additional 50' x 30' portion of the north end of the lots is roofed. The lot perimeter has concrete curbing to prevent manure runoff. Each of the lots has an opening to the scrape alley at the south end of the lots. The scrape alley flows to settling basin E18 at the south end of the lots. The concrete settling basin has dimensions 115' x 30' x 4' deep with an inside 10:1 ramp and serves as a runoff and sediment control structure for runoff from the concrete lots. The liquid from the settling basin is transferred via gravity flow sewer pipe to earthen storage ponds E16 and E17. The concrete lots are scraped and hauled on a weekly basis.

E3A-B (300s Lots)

Lots 301 and 302 are earthen and have dimensions 285' x 200' and 230' x 220' respectively. A feed alley runs along the east side of the lots and manure transfer alley at the west side. The runoff from these lots is not detained. The lots are scraped and hauled between groups.

Resource Concerns (Water Quality, Soil Erosion, etc)

(Description of how all water quality issues will be resolved)

The following water quality issues have been addressed in this section of the Comprehensive Nutrient Management Plan.

Brick House Site

Stormwater Runoff from Roofed Areas around Feed Storage

To divert clean roof runoff from entering the manure/wastewater storage systems a roof runoff management system consisting of new gutters, down spouts, and underground outlets shall be installed.

Wastewater/Runoff from Feed Storage Areas

A concrete curb shall be installed around the and along the concrete feed storage area to contain and transfer leachate and wastewater runoff (up to a 25yr, 24hr event) from the feed storage area to earthen basin P3. Concrete repairs shall be made to the feed storage area bunker walls to contain leachate form silage and feed additives.

Stormwater Runoff entering concrete scrape alleys

Mountable concrete curbing shall be installed along scrape alleys extending from the concrete lots to the settling basins to prevent manure and wastewater runoff from the lots and to divert clean water from entering the manure and wastewater collection system.

Stormwater runoff entering concrete settling basins

Mountable curbing shall be installed at the entrances to settling basins to contain manure and wastewater runoff from the concrete lots and divert clean water from entering the manure and wastewater collection system.

Manure / wastewater / stormwater runoff from earthen lots

To divert clean surface runoff from entering earthen lots and to prevent manure and wastewater runoff from the lots, earthen diversions or swales shall be installed where necessary.

Stone House Site

Stormwater runoff entering concrete scrape alleys

Mountable concrete curbing shall be installed along scrape alleys extending from the concrete lots to the settling basins to prevent manure and wastewater runoff from the lots and to divert clean water from entering the manure and wastewater collection system.

Stormwater runoff entering concrete settling basins

Mountable curbing shall be installed at the ramp entrances to settling basins to contain manure and wastewater runoff from the concrete lots and divert clean water from entering the manure and wastewater collection system.

Lack of manure / wastewater / stormwater runoff storage
Repairs shall be made to the west berm of earthen storage pond E17 to divert clean surface runoff from entering the manure/wastewater storage system

50's Lots

Manure / wastewater / stormwater runoff from earthen lots
To divert clean surface runoff from entering the lots, earthen diversions or swales shall be installed where necessary.

Operation and Maintenance of Waste Storage Pond
An agitation/pump out ramp with staff gauge shall be installed to dewater pond E13 without damaging berms and pond bottom.

60's Lots

Lack of manure / wastewater / stormwater runoff storage
A solid/Liquid separating basin shall be installed between the earthen lots and pond E15. Waste storage pond E15 shall be cleaned out to original design depth.

Operation and Maintenance of Waste Storage Pond
An agitation/pump out ramp with staff gauge shall be installed to dewater pond E15 without damaging berms and pond bottom.

100's Lots

Operation and Maintenance of Waste Storage Pond
An agitation/pump out ramp with staff gauge shall be installed to dewater pond E10-11 without damaging berms and pond bottom.

Lack of manure / wastewater / stormwater runoff storage
A solid/Liquid separating basin shall be installed between the earthen lots and pond E10-11. Waste storage ponds E10-11 shall be cleaned out to original design depths.

Manure / wastewater / stormwater runoff from earthen lots
To divert clean surface runoff from entering the lots, earthen diversions or swales shall be installed where necessary.

200's Lots

Manure / stormwater runoff from pasture paddocks and transfer alley.
To divert clean surface runoff from entering the lots, earthen diversions or swales shall be installed to outlet storm runoff with out causing erosion.

Lots shall be depopulated, vegetation reestablished, and area maintained as pasture paddocks.

300's Lots

Manure / wastewater / stormwater runoff from earthen lots
These lots will be depopulated and decommissioned. Manure solids will be removed from all lots and applied at agronomic rates. Fences will be removed and area will be returned to row crop production.

Lack of manure / wastewater / stormwater runoff storage
These lots will be depopulated and decommissioned. Manure solids will be removed from all lots and applied at agronomic rates. Fences will be removed and area will be returned to row crop production.

400's Lots

Manure / wastewater / stormwater runoff from earthen lots
These lots will be depopulated and decommissioned. Manure solids will be removed from all lots and applied at agronomic rates. Fences will be removed and area will be returned to row crop production.

Lack of manure / wastewater / stormwater runoff storage
These lots will be depopulated and decommissioned. Manure solids will be removed from all lots and applied at agronomic rates. Fences will be removed and area will be returned to row crop production.

Proposed System Summary

(Narrative describing the proposed components and how they fit together for the system)

Brick House site

	Animal	Manure / Wastewater Volumes		
		Liquids (1000 gal)		Solids (Ton)
Lot's	Type	Average	Extreme	Average
Brick House Lots	Beef Feeder	850	1100	6018
50's	Beef Feeder	1200	1600	811
60's	Beef Feeder	3200	4300	867
100'S	Beef Feeder	2100	3100	1323
200'S	Beef Feeder	0	0	0
400'S	Beef Feeder	0	0	0
Total		7350	10100	9019

Stone House site

	Animal	Manure / Wastewater Volumes		
		Liquids (1000 gal)		Solids (Ton)
Lot's	Type	Average	Extreme	Average
Stone House lots	Beef Feeder	2100	2540	2681
300'S	Beef Feeder	0	0	0
Total		2100	2540	2681

11700

Based on estimated volumes above and the producer's application records, 8,000 tons of solids are transferred off-site and 7 million gallons of liquid may be lost in the earthen storages based on an estimated seepage rate of 1.5x10-6 cm/sec.

The following pages list proposed practices, and operation and maintenance procedures that should be adhered to for this facility.

Solid/Liquid Waste Separation Facility (632) (See Section 6 for Quantities)

60's - A new solid settling basin is proposed to be installed below the 60's earthen lots (E6A-D) in the location of the existing holding pond E14 to address the water quality concern of manure lot runoff. The system will be comprised of an earthen settling basin with a concrete bottom and ramp and inlet with gravity sewer piping to transfer liquids to E15.

100's - Two (2) new concrete solids settling basins (P1 & P2) are proposed to be installed below the 100's earthen lots (E1A-H) to address the water quality concern of manure lot runoff. The system will be comprised of two concrete settling basin with ramps and an inlet with gravity sewer piping to transfer liquids to E11 and E12.

Manure Transfer (634) (See Section 6 for Quantities)

Stone House lots - A new manure transfer system is proposed to be installed along concrete scrape alley E20 and at the entrances to settling basin E18 to address the water quality concern of manure lot runoff. The system will be comprised of mountable curbs (18" wide x 13" high) to divert clean stormwater runoff from entering the scrape alleys.

Brick House lots - A new manure transfer system is proposed to be installed along concrete scrape alley E21 and at the entrance to settling basin E19 to address the water quality concern of manure lot runoff. The system will be comprised of mountable curbs (18" wide x 13" high) to divert clean stormwater runoff from entering the scrape alleys.

Feed storage Area - A new manure transfer system is proposed to be installed along the south edge E26 TO address the water quality concern of silage leachate runoff. The system will be comprised of mountable curbs (18" wide x 13" high) at the entrance to E26 to divert clean stormwater runoff from entering the feed storage area and a curb along the south edge of E26 (12" wide x 12" high) to divert silage leachate to a reception box with riser. The reception box will drain to proposed waste storage pond P3.

Waste Storage Facility (313) (See Section 6 for Quantities)

Brick House Lots- A new staff gauge and concrete agitation/pump out ramp shall be installed in holding pond E10 and the pond shall be cleaned out to original design depth to address the water quality concern of lack of storage.

Stone House Lots – New staff gauges and concrete agitation/pump out ramp shall be installed in holding ponds E16 & E17 and the ponds shall be cleaned out to original design depth to address the water quality concern of lack of storage.

50's - A new staff gauge and concrete agitation/pump out ramp shall be installed in holding pond E13 and the pond shall be cleaned out to original design depth to address the water quality concern of lack of storage.

60's - A new staff gauge and concrete agitation/pump out ramp shall be installed in holding pond E15 and the pond shall be cleaned out to original design depth to address the water quality concern of lack of storage.

100's - New staff gauges and concrete agitation/pump out ramps shall be installed in holding pond E11 & E12 and the ponds shall be cleaned out to original design depth to address the water quality concern of lack of storage.

Feed Storage Area – A new waste storage pond (P3) will be constructed below the feed storage area and will accommodate runoff from at least the 25 year storm. The pond will be regularly pumped. In winter months, liquids may be transferred to pond E13.

Roof Runoff Management (558) (See Section 6 for Quantities)

Feed Storage Area - A new roof runoff management system is proposed for installation on the feed storage building adjacent to feed storage area to address the concerns related to stormwater runoff. The system will be comprised of new gutters, downspouts, and underground outlet piping.

Diversion (362) (See Section 6 for Quantities)

60's - New diversions are proposed to be installed around the 60's earthen lots (E6A-D) to address the water quality concern of manure lot runoff. The system will be comprised of earthen diversion berms and mountable curbs to divert clean stormwater runoff from entering the lots.

100's - New diversions are proposed to be installed around the 100's earthen lots (E1A-H) to address the water quality concern of manure lot runoff. The system will be comprised of earthen diversion berms and mountable curbs to divert clean stormwater runoff from entering the lots.

200's - New diversions are proposed to be installed around the 200's pasture paddocks (E2A-D) to address the water quality concern of erosion from stormwater runoff. The system will be comprised of earthen diversion berms, risers, and under ground outlets to divert clean stormwater runoff.

Pasture & Hay Planting (512) (See Section 6 for Quantities)

200's - Seeding permanent grass and mulching will be required in disturbed areas and cattle transfer lane, etc. in order to stabilize soils and control erosion.

Critical Area Seeding/Mulching (342) (See Section 6 for Quantities)

60's - Seeding permanent grass and mulching will be required in disturbed areas and around settling basin, gravity sewer trench, etc. in order to stabilize soils and control erosion.

100's - Seeding permanent grass and mulching will be required in disturbed areas and around settling basin, gravity sewer trench, etc. in order to stabilize soils and control erosion.

Manure Transfer to Fields (634) (See Section 6 for Quantities)

Manure pack will be removed and field applied at least every six months. Presently, the operator owns one 625 cu-ft (500 Bu) box spreader, two (2) 435 cu-ft (300 Bu) Flail type side slinger spreader. Assuming six loads per hour and eight hours/day approximately 40 days will be required to transfer one year of manure, bedding, and wastewater to fields for utilization.

Liquid Manure will be removed and field applied at least every six months. Presently, the operator contracts to a private applicator for applying the liquid manure but owns a 1200 gallon tank and a 6" Dry Hill agitation pump with 500 feet of 6" hose to pump down and transfer liquid manure in an emergency. Assuming a 600 GPM pump and eight hours/day approximately 40 days will be required to transfer one year of liquid manure, wastewater, and stormwater to fields for utilization. The operator shall purchase more/larger solids spreading equipment in order to minimize the required window for transporting manure, bedding, and wastewater to fields for utilization.

Mortality Management:

Off-site Rendering – Mortalities shall be hauled away and disposed of by Five Star Enterprises.

Manure and Wastewater Storage and Handling - Record Keeping

(See Record Keeping – Appendix E)

{Insert permitting documents if applicable}

Any changes in animal numbers, average weights, or manure storages will require this plan to be updated.

Call Maurer-Stutz, Inc. at (309)693-7615

Alternatives Discussed:

Lot Area	Concerns	Alternative Solutions
Brick House Concrete Lots E7A thru E7D	The manure and waste water storage pond (E10) may not have adequate storage. The Staff gauge at Pond E10 is not adequately marked	Option 1: • Check and/or clean out pond to dimensions 80' x 220' x 12' deep. • Install an adequate staff gauge. • Dewater pond to stop pump elevation on the staff gauge.
50's Lots – E5A thru D and E5F	Runoff from lot E5F is not contained.	Option 1: • Check and/or clean out pond E13 to dimensions 260' x 450' x 10' deep. • Install an adequate staff gauge in pond E13. • Dewater pond to stop pump elevation on staff gauge. Option 2: • Construct a waste storage pond below lot E5F and divert all runoff into same Option 3: • Construct a basin/reception tank and pump runoff to large pond E13. Option 4: • Abandon Lot E5F.
60's Lots – E6a thru E6D	The storage ponds E14 and E15 may not have adequate storage.	Option 1: • Check and/or clean out pond E15 to dimensions 280' x 60' x 10' deep. • Install an adequate staff gauge in pond E15. • Dewater pond to stop pump elevation on staff gauge. Option 2: • Construct a settling basin at location of pond E14. • Pipe water from basin to pond E15, eliminating need to store fresh water running off between E14 and E15.
100's Lots – Lots E1A thru E1H.	There are no settling basins in front of ponds E11 and E12 and sludge storage reduces the working storage volume in the ponds. Staff gauges in ponds E11 and E12are inadequate. Damage to berm at south end of pond E12 by hauling equipment has reduced the working storage volume.	Option 1: • Check and/or clean out ponds E11 and E12 to dimensions 345' x 110' x 10' deep – each. • Install adequate staff gauges in ponds E11 and E12. • Dewater pond to stop pump elevation on staff gauge. Option 2: • Concrete the alleys to north and south of lots and install curbs for settling solids. • Repair damaged berm. Construct a surfaced (rock?) access to the pond for pumping

200's Lots E2A thru E2D	Runoff from lots is not contained and filter areas below lots does not eliminate concentrated flow.	Option 1: • These lots are too large to treat like traditional feedlots. • Abandon lots * (as feedlots) all together. Option 2: • Reduce size of actual feedlots. • Place smaller lots adjacent each other in northwest corners and southwest corners. • Assume each of the 4 lots are 200' x 200'. • Construct settling basins and a waste storage pond for each pair of lots – to the east • Between the lots and the waterway. Construct diversions as necessary to direct runoff to basins. • Ponds (2) would need to be about 300' x 100' by 8' deep. • Re-establish pastures in larger portions of each old lot and use according to a pasture management plan.
300's Lots E3A and E3B	Runoff from lots is not contained and filter areas below lots does not eliminate concentrated flow.	Option 1: • Construct a settling basin/reception pit below 2 lots. • Construct diversions as necessary to direct runoff to basin. • Pump runoff from 300's lots to holding ponds just east of lots (E16 and E17), or: Option 2: • Construct a holding pond for runoff from 300's lots. Pond would need to be approximately 100' x 300' x 8' deep. Option 3: • Another alternative would be to abandon lots *.
400's Lots E4A and E4B	Runoff from lots is not contained and filter areas below lots does not eliminate concentrated flow.	Option 1: • Construct a settling basin/reception pit below 2 lots. • Construct diversions as necessary to direct runoff to basin. Option 2: • Construct a holding pond for runoff from 400's lots. • Pond would need to be approximately 150' x 300' x 8' deep. Option 3: • An alternative would be to abandon lots *.
Stone House Concrete Lots E9A thru E9H	Curbs on scrape alleys may not be adequate. Adequate staff gauges not installed in ponds E16 and E17.	Option 1: • Check and/or clean out pond E16 to dimensions 150' x 265' x 10' deep and E17 to 125' x 330' x 10' deep. • Construct new curbing if necessary to divert runoff. • Install adequate staff gauges in E16 and E17. • Dewater ponds to stop pump elevation on the staff gauges.

Temporary Pens E8A thru E8C	??	??
Feed Storage Area	Runoff and leachate is not contained Cracks in feed storage bunker wall allow leachate to escape.	Option 1: • Repair cracked concrete. • Construct a catch basin for runoff and leachate – pipe or pump to basins E11 and E12 Option 2: • Construct roofs/covers over feed storage.
Composting Area	Fresh water runoff flows over composting area and runoff is not contained.	Option 1: • Construct a diversion above the composting area to preclude fresh water runoff. • Construct a catch basin for runoff and pipe or pump to basins E14 and E15 or construct a small storage pond, or: Option 2: • Construct a roof over composting area or cover piles (along with fresh water diversion).
Wood Chips Storage and Mortality Management Areas + Fuel Storage Area + Others	??	Option 1: • Gutters on all buildings adjacent lots. • Spill Prevention Control and Countermeasures (SPCC) plan for fuel storage area.

* If E5F in 50's Lots, 200's, 300's and 400's Lots were abandoned, all those animals could be housed in one new building and the large amount of pasture between the Brick House and the Stone House could be managed as a rotational grazing system.

MAURER & STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - FEED
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	P3	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff																													
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TIME	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	0	0	0	0	0	0	0	0

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	P3	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period (M)	1.00																												
Period (D)	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Required Vol																													
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol																													
CF	1193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	8918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra																													
CF	1193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	8918	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage Volumes	Required Vol CF	Required Vol GALLONS	Designed Vol CF	Designed Vol GALLONS	Extra CF
Total	0	0	1193	8918	1193

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0 ac

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled

Type	UNITS	Volume
LIQUID	GAL	0
SOLID	TONS	0

(MANURE & PRECIP)

APPLICATION INFROMATION

TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID		GAL		#DIV/0!	#DIV/0!
SOLID		bu		#DIV/0!	#DIV/0!

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	P3	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Working	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	19040.164	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
24 hr storm	5347.0667	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Precip	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	2812	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Freeboard	16952	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Total	45344	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gal to Haul	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-	
Tons to Haul	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	0	0	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0		
Annual tons						0	0	0	0	0	0	0	0	0	0													0	0	0

S:\238\2008 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure\Wastewater)\MS\Calculations\MS_AWM V 11.0.FEED

MAURER ▲ STUTZ, INC.
ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - FEED
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Runoff Calculations

Normal Runoff

Area =	43560

Concrete (CN=97)

Months	R	P	Total CF
JAN	36	1.12	0
FEB	34	1.24	0
MAR	46	2.58	0
APR	52	3.38	0
May	55	3.57	0
June	60	5.07	0
July	61	2.9	0
AUG	58	4.45	0
SEPT	61	3.63	0
OCT	55	2.51	0
NOV	49	2.71	0
DEC	40	1.77	0
Total		0.0	0

Area =	0

Earth (CN=90)

Months	R	P	Total CF
JAN	12	1.12	0
FEB	10	1.24	0
MAR	15	2.58	0
April	20	3.38	0
May	21	3.57	0
June	27	5.07	0
July	30	2.9	0
AUG	26	4.45	0
SEPT	30	3.63	0
OCT	23	2.51	0
NOV	16	2.71	0
DEC	12	1.77	0
Total			0

Area =	0

Roof (CN=100)

Months	R	P	Total CF
JAN	100	1.12	0
FEB	100	1.24	0
MAR	100	2.58	0
April	100	3.38	0
May	100	3.57	0
June	100	5.07	0
July	100	2.9	0
AUG	100	4.45	0
SEPT	100	3.63	0
OCT	100	2.51	0
NOV	100	2.71	0
DEC	100	1.77	0
Total			0

Net Normal Ruoff = 0 CF

25 YR - 24HR Storm Event

Concrete (CN=97)

CN	97	
S	0.31	in
I_{25}	5.60	in
Q_{25}	5.25	in
Vol_{25}	19040.16	CF

Earth (CN=90)

CN	90	
S	1.11	in
I_{25}	5.60	in
Q_{25}	4.46	in
Vol_{25}	0.00	CF

Roof (CN=100)

CN	100	
S	0.00	in
I_{25}	5.60	in
Q_{25}	5.60	in
Vol_{25}	0.00	CF

25yr Storm Event Runoff = 19,040 CF

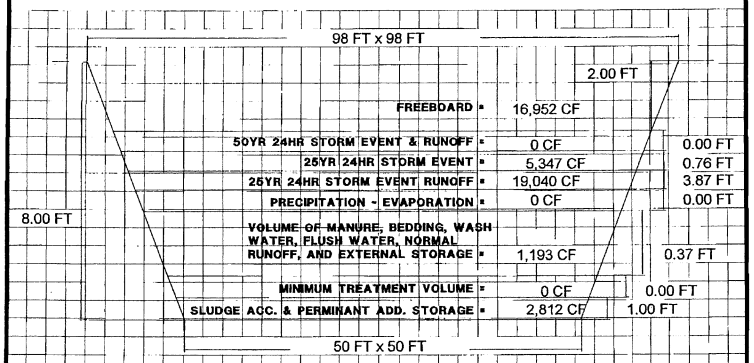
Notes

Concrete Areas: Earthen Areas: Roofed Areas:

MAURER ▲ STUTZ, INC.
ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - FEED
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Holding Pond 1 Design Sheet, P3



EARTHEN STORAGE

TOTAL DEPTH	8.00 FT
FREEBOARD	2.00 FT
RESIDUAL SOLIDS	1.00 FT
MINIMUM TREATMENT	0.00 FT
PRECIP-EVAP DEPTH	0.00 FT
25 YR, 24-HR Runoff V	19,040 CF
25 YR, 24-HR Runoff D	3.87 FT
25 YR, 24-HR EFF	0.76 FT
50 YR, 24-HR Runoff V	0 CF
WORKING DEPTH	0.37 FT

50 YR, 24-HR VOL	0 CF	≈	0.00 MG
25 YR, 24-HR VOL	5,347 CF	≈	0.04 MG
PRECIP-EVAP VOL	0 CF	≈	0.00 MG
WORKING VOLUME	1,193 CF	≈	0.01 MG
MINIMUM TREATMENT	0 CF	≈	0.00 MG
RESIDUAL SOLIDS	2,812 CF	≈	0.02 MG
TOTAL RAMP VOL	0 CF	≈	0.00 MG
FREEBOARD	16,952 CF	≈	0.13 MG
TOTAL VOLUME	45,344 CF	≈	0.34 MG

Deminsions	
BOTTOM WIDTH	50 FT
BOTTOM LENGTH	50 FT
INSIDE SLOPE	3 FT
TOP WIDTH	98 FT
TOP LENGTH	98 FT
START PUMPING	
STOP PUMPING	

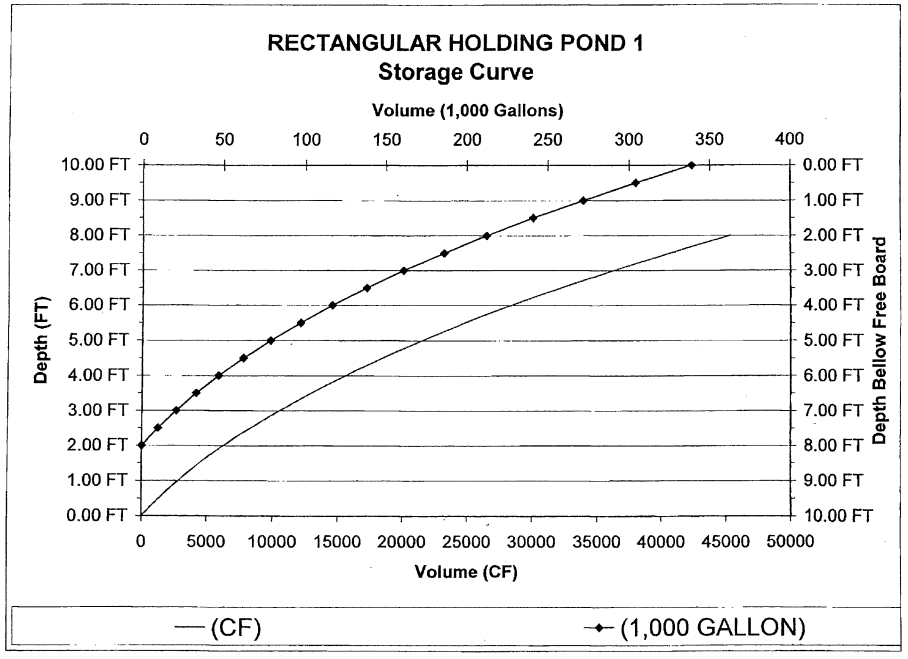
ACTUAL PRECIP	0.0 in
ACTUAL EVAP	0.0 in
25 YR, 24-HR ACT	5.6 in
50 YR, 24-HR ACT	0.0 in
50 YR, 24-HR Runoff D	0.00 FT
50 YR, 24-HR EVENT D	0.00 FT

CALCULATE

S:\238\2008 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure Wastewater)\MSI Calculations\MSI AWM V.11.0 FEED

POND 1 - STAGE STORAGE

TOTAL DEPTH	VOLUME (CF)	VOLUME (1,000 GALLON)	DEPTH BELOW	VOLUME (1,000 GAL / 1/2 FT)
8.00 FT	45344	339	0.00 FT	0.0
7.50 FT	40688	304	0.50 FT	34.8
7.00 FT	36316	272	1.00 FT	32.7
6.50 FT	32221	241	1.50 FT	30.6
6.00 FT	28392	212	2.00 FT	28.6
5.50 FT	24822	186	2.50 FT	26.7
5.00 FT	21500	161	3.00 FT	24.8
4.50 FT	18419	138	3.50 FT	23.0
4.00 FT	15568	116	4.00 FT	21.3
3.50 FT	12940	97	4.50 FT	19.7
3.00 FT	10524	79	5.00 FT	18.1
2.50 FT	8313	62	5.50 FT	16.5
2.00 FT	6296	47	6.00 FT	15.1
1.50 FT	4466	33	6.50 FT	13.7
1.00 FT	2812	21	7.00 FT	12.4
0.50 FT	1327	10	7.50 FT	11.1
0.00 FT	0	0	8.00 FT	9.9
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0
0.00 FT	0	0	8.00 FT	0.0



S:\238\2008 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure Wastewater)\MSI Calculations\MSI AWM V.11.0 FEED

MAURER ▲ STUTZ, INC.
ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - Brick House Lots
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Animal Data

		Actual		ASAE D384.2				VS		TS		AU
			Weight	Manure	Weight	Manure	Manure					
	Animals	Quantity	lbs	cf/d-a	lbs	cf/d/AU	CF/day	lbs/d/AU	lbs/day	lbs/d/AU	lbs/day	
1	Feeders	160	801	1.05	900	1.17	149.5	6.00	769.0	6.00	769.0	128.2
2	Feeders	160	801	1.05	900	1.17	149.5	6.00	769.0	6.00	769.0	128.2
3	Feeders	160	801	1.05	900	1.17	149.5	6.00	769.0	6.00	769.0	128.2
4	Feeders	160	801	1.05	900	1.17	149.5	6.00	769.0	6.00	769.0	128.2
5				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
6				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
7				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
8				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
9				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
	Total	640					598		3076		3076	513

Rainfall Data	
County, State	JoDaviess, Illinois
Precip for storage period	2.7 in
Annual Lake Evap	32.6 in
% Evap for storage period	3%
1 Yr 2 Hr Storm Event	1.52 in
2 Yr 24 Hr Storm Event	3.11 in
25 Yr 24 Hr Storm Event	5.6 in
Storage Period	1.0 Months
VS Loading Rate	
ODOR Loading Rate	

Rainfall Data (Indiana Only)	
Location	JoDaviess, Illinois
50 Yr 24 Hr Storm Event	6.5 in
IDEM 50 Yr 24 Hr Storm	6.0 in
Greater of Storm Events	6.5 in

Location Data

Animals	Holding Pond	Covered Stack				Uncovered Stack				Rect. Tank	Circular Tank	Pasture	Settling Basin
	E10	E7A (b)	E7B (b)	E7C (b)	E7D (b)	E7A	E7B	E7C	E7D				E19
1: Feeders	1%	23%				74%							
2: Feeders	1%		23%				74%						
3: Feeders	1%			23%				74%					
4: Feeders	1%				23%				74%				
Parlor													
Sprinkler													
Waters													
Silage Leach													
Other													
Solid Removal													
Lagoon treat													
Runoff	100%												
25Y Runoff	100%												
Solid Stored													
Wash Water													
Flush Water													
Bedding													
50Y Runoff													

*Values calculated above are based on data from the Livestock Waste Facilities Handbook

MAURER ▲ STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - Brick House Lots
PROJECT NO : 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: ______ DATE: ______ OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack				
Facility	E10	0	0	0	0	E7A (b)	E7B (b)	E7C (b)	E7D (b)	0	E7A	E7B	E7C	E7D	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	5.98	0.00	0.00	0.00	0.00	34.39	34.39	34.39	34.39	0.00	110.64	110.64	110.64	110.64	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	195.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	201.59	0.00	0.00	0.00	0.00	34.39	34.39	34.39	34.39	0.00	110.64	110.64	110.64	110.64	0.00
Annual Vol	73580	0	0	0	0	12552	12552	12552	12552	0	40385	40385	40385	40385	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	60	60	60	60	60
Annual Tons	0	0	0	0	0	314	314	314	314	0	1212	1212	1212	1212	0
Annual Gal	5.50E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0
# LOADS	92	0	0	0	0	29	29	29	29	0	93	93	93	93	0
TIME	31	0	0	0	0	7	7	7	7	0	23	23	23	23	0

	Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	0	0	0	0	0	0	0	0	0	0	0	0	E19	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	586.1	0.0	0.0	0.0	195.6	0.0	0.0	781.7

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	213933	0	0	0	71397	0	0	285331

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack				
Storage	E10	0	0	0	0	E7A (b)	E7B (b)	E7C (b)	E7D (b)	0	E7A	E7B	E7C	E7D	0
Period (M)	1.00					6.00	6.00	6.00	6.00		6.00	6.00	6.00	6.00	
Period (D)	30	0	0	0	0	180	180	180	180	0	180	180	180	180	0
Required Vol															
CF	6048	0	0	0	0	6190	6190	6190	6190	0	19916	19916	19916	19916	0
GALLONS	45219	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	155	155	155	155	0	597	597	597	597	0
Designed Vol															
CF	6837	0	0	0	0	6994	6994	6994	6994	0	23144	23144	23144	23144	0
GALLONS	51117	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	175	175	175	175	0	694	694	694	694	0
Extra															
CF	789	0	0	0	0	804	804	804	804	0	3228	3228	3228	3228	0
GALLONS	5898	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	20	20	20	20	0	97	97	97	97	0

	Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	0	0	0	0	0	0	0	0	0	0	0	0	E19	0
Period (M)													6.00	
Period (D)	0	0	0	0	0	0	0	0	0	0	0	0	180	0
Required Vol														
CF	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol														
CF	0	0	0	0	0	0	0	0	0	0	0	0	9600	0
GALLONS	0	0	0	0	0	0	0	0	0	0	0	0	71779	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra														
CF	0	0	0	0	0	0	0	0	0	0	0	0	9600	0
GALLONS	0	0	0	0	0	0	0	0	0	0	0	0	71779	0
TONS	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage	Required Vol	Required Vol	Designed Vol	Designed Vol	Extra
Volumes	CF	GALLONS	CF	GALLONS	CF
Total	110472	45219	136989	122896	26516

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0 ac

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled		
Type	UNITS	Volume
LIQUID	GAL	830,723
SOLID	TONS	6,018
(MANURE & PRECIP)		

APPLICATION INFROMATION					
TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID	6000	GAL	3	139	47
SOLID	350	bu	4	488	122

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack				
Storage	E10	0	0	0	0	E7A (b)	E7B (b)	E7C (b)	E7D (b)	0	E7A	E7B	E7C	E7D	0
Working	6047.7032	0	0	0	0	6190.128	6190.128	6190.128	6190.128	0	19916.06	19916.064	19916.06	19916.06	0
24 hr runoff	27753.453	0	0	0	0	-	-	-	-	-	-	-	-	-	-
24 hr storm	8446.6667	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Precip	3210.9496	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Residuals	5336	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Freeboard	27416	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Total	79000	0	0	0	0	6190	6190	6190	6190	0	19916	19916	19916	19916	0
Gal to Haul	69226.947	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Tons to Haul	-	-	-	-	-	155	155	155	154.7532	0	597	597	597	597	0
Annual gal	830723.36	0	0	0	0										
Annual tons						309.5064	309.5064	309.5064	309.5064	0	1194.964	1194.9638	1194.964	1194.964	0

	Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	0	0	0	0	0	0	0	0	0	0	0	0	E19	0
Working	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	0	0	0	0	0	0	0	0	0	0	0			
24 hr storm	0	0	0	0	0	0	0	0	0	0	0			
Precip	0	0	0	0	0	0	0	0	0	0	0			
Treatment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	0	0	0	0	0	0	0	0	0	0	0			
Freeboard	0	0	0	0	0	0	0	0	0	0	0			
Total	0	0	0	0	0	0	0	0	0	0	0			
Gal to Haul	0	0	0	0	0	0	0	0	0	0	0	-		
Tons to Haul	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	0	0	0	0	0	0	0	0	0	0	0			
Annual tons												0	0	0

S:\238\2008 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure Wastewater)\MSI Calculations\AWM 2009-08-24\2009-08-24 MSI AWM-V 11.0 Brick House lots.xls

MAURER ▲ STUTZ, INC.
ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - Stone House Lots
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Animal Data

	Animals	Actual Quantity	Actual Weight lbs	ASAE D384.2 Manure cf/d-a	ASAE D384.2 Weight lbs	Manure cf/d/AU	Manure CF/day	VS lbs/d/AU	VS lbs/day	TS lbs/d/AU	TS lbs/day	AU
1	Feeders	150	801	1.05	900	1.17	140.2	6.00	720.9	6.00	720.9	120.2
2	Feeders	150	801	1.05	900	1.17	140.2	6.00	720.9	6.00	720.9	120.2
3	Feeders	110	899	1.05	900	1.17	115.4	6.00	593.3	6.00	593.3	98.9
4	Feeders	90	899	1.05	900	1.17	94.4	6.00	485.5	6.00	485.5	80.9
5				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
6				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
7				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
8				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
9				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
	Total	500					490		2521		2521	420

Rainfall Data	
County, State	JoDaviess, Illinois
Precip for storage period	34.9 in
Annual Lake Evap	32.5 in
% Evap for storage period	100%
1 Yr 2 Hr Storm Event	1.52 in
2 Yr 24 Hr Storm Event	3.11 in
25 Yr 24 Hr Storm Event	5.6 in
Storage Period	12.0 Months
VS Loading Rate	
ODOR Loading Rate	

Rainfall Data (Indiana Only)	
Location	JoDaviess, Illinois
50 Yr 24 Hr Storm Event	6.5 in
IDEM 50 Yr 24 Hr Storm	6.0 in
Greater of Storm Events	6.5 in

Location Data

Animals	Holding Pond E16	Holding Pond E17	Covered Stack E9C	Covered Stack E9H	Uncovered Stack E9A	Uncovered Stack E9B	Uncovered Stack E9F	Uncovered Stack E9G	Rect. Tank	Circular Tank	Pasture	Settling Basin E18
1: Feeders	29%	29%	6%		36%							
2: Feeders	29%	29%	6%			36%						
3: Feeders	20%	14%		11%			55%					
4: Feeders	19%	20%		11%				50%				
Parlor												
Sprinkler Waters												
Silage leach												
Other												
Solid Removal												
Lagoon treat												
Runoff	50%	50%										
25Y Runoff	50%	50%										
Solid Stored												
Wash Water												
Flush Water												
Bedding												
50Y Runoff												

*Values calculated above are based on data from the Livestock Waste Facilities Handbook

MAURER & STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - Stone House Lots
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: DATE: OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	E16	E17	0	0	0	E9C	E9H	0%	0	0	E9A	E9B	E9F	E9G	0	0	0	0	0	0	0	0	0	0	0	0	0	E18	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	122.31	116.33	0.00	0.00	0.00	16.82	23.07	0.00	0.00	0.00	50.46	50.46	63.45	47.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	127.86	127.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	250.17	244.19	0.00	0.00	0.00	16.82	23.07	0.00	0.00	0.00	50.46	50.46	63.45	47.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	91312	89130	0	0	0	6140	8422	0	0	0	18419	18419	23161	17227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	60	60	60	60	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	153	211	0	0	0	553	553	695	517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	6.83E+05	6.66E+05	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	1138	1111	0	0	0	12	16	0	0	0	35	35	43	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME	19	19	0	0	0	6	8	0	0	0	18	18	22	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	490.1	0.0	0.0	0.0	255.7	0.0	0.0	745.8

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	178893	0	0	0	93336	0	0	272229

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E16	E17	0	0	0	E9C	E9H	0%	0	0	E9A	E9B	E9F	E9G	0	0	0	0	0	0	0	0	0	0	0	0	0	E18	0
Period (M)	12.00	12.00				12.00	12.00				12.00	12.00	12.00	12.00														1.00	
Period (D)	365	365	0	0	0	365	365	0	0	0	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
Required Vol																													
CF	91312	89130	0	0	0	6140	8422	0	0	0	18419	18419	23161	17227	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	682737	666422	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	153	211	0	0	0	553	553	695	517	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol																													
CF	98300	95851	0	0	0	7744	10959	0	0	0	20654	20654	27314	24549	0	0	0	0	0	0	0	0	0	0	0	0	0	5400	0
GALLONS	734986	716676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40376	0
TONS	0	0	0	0	0	194	274	0	0	0	620	620	819	736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra																													
CF	6988	6721	0	0	0	1604	2537	0	0	0	2235	2235	4153	7322	0	0	0	0	0	0	0	0	0	0	0	0	0	5400	0
GALLONS	52249	50254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40376	0
TONS	0	0	0	0	0	40	63	0	0	0	67	67	125	220	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage	Required Vol	Required Vol	Designed Vol	Designed Vol	Extra
Volumes	CF	GALLONS	CF	GALLONS	CF
Total	272229	1349159	311425	1492037	39196

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled

Type	UNITS	Volume
LIQUID	GAL	1,947,765
SOLID	TONS	2,681

(MANURE & PRECIP)

APPLICATION INFROMATION

TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID	600	GAL	60	3247	55
SOLID	435	bu	2	173	87

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E16	E17	0	0	0	E9C	E9H	0%	0	0	E9A	E9B	E9F	E9G	0	0	0	0	0	0	0	0	0	0	0	0	0	E18	0
Working	91311.64	89129.542	0	0	0	6139.665	8422.1317	0	0	0	18419	18418.995	23160.86	17227.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	12872.654	12872.654	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
24 hr storm	20335	21203	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Precip	38339.01	41720.669	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	40536	39216	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Freeboard	74616	77136	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Total	285000	288000	0	0	0	6140	8422	0	0	0	18419	18419	23161	17227	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gal to Haul	969397.91	978367.03	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-	
Tons to Haul	-	-	-	-	-	153	211	0	0	0	553	553	695	517	0	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	969397.91	978367.03	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0		
Annual tons						153.49163	210.55329	0	0	0	552.5699	552.56985	694.8259	516.8126	0													0	0	0

S:\238\08\08 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure Characterization)\MS Calculations\AWM 2008-08-24\2008-08-24 MS AWM V 13 of Stone House Lots.xls

MAURER & STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - 50's
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Animal Data

	Animals	Quantity	Actual Weight lbs	ASAE D384.2 Manure cf/d-a	ASAE D384.2 Weight lbs	Manure cf/d/AU	Manure CF/day	VS lbs/d/AU	VS lbs/day	TS lbs/d/AU	TS lbs/day	AU
1	Earth Lot	75	877	0.55	1000	0.55	36.2	0.34	22.4	11.00	723.5	65.8
2	Earth Lot	75	877	0.55	1000	0.55	36.2	0.34	22.4	11.00	723.5	65.8
3	Earth Lot	75	877	0.55	1000	0.55	36.2	0.34	22.4	11.00	723.5	65.8
4	Earth Lot	75	877	0.55	1000	0.55	36.2	0.34	22.4	11.00	723.5	65.8
5				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
6				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
7				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
8				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
9				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
	Total	300					145		89		2894	263

Rainfall Data

County, State	JoDaviess, Illinois
Precip for storage period	34.9 in
Annual Lake Evap	32.5 in
% Evap for storage period	100%
1 Yr 2 Hr Storm Event	1.52 in
2 Yr 24 Hr Storm Event	3.11 in
25 Yr 24 Hr Storm Event	5.6 in
Storage Period	12.0 Months
VS Loading Rate	
ODOR Loading Rate	

Rainfall Data (Indiana Only)

Location	JoDaviess, Illinois
50 Yr 24 Hr Storm Event	6.5 in
IDEM 50 Yr 24 Hr Storm	6.0 in
Greater of Storm Events	6.5 in

Location Data

Animals	Holding Pond E13	Covered Stack	Uncovered Stack 51	52	53	54	Rect. Tank	Circular Tank	Pasture	Settling Basin
1: Earth Lot	4%		96%							
2: Earth Lot	4%			96%						
3: Earth Lot	4%				96%					
4: Earth Lot	4%					96%				
Parlor										
Sprinkler Waters										
Silage leach										
Other										
Solid Removal										
Lagoon treat										
Runoff	100%									
25Y Runoff	100%									
Solid Stored										
Wash Water										
Flush Water										
Bedding										
50Y Runoff										

*Values calculated above are based on data from the Livestock Waste Facilities Handbook

MAURER ▲ STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - 50's
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: DATE: OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	E13	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	5.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.73	34.73	34.73	34.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	184.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	190.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.73	34.73	34.73	34.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	69484	0	0	0	0	0	0	0	0	0	12676	12676	12676	12676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	32	32	32	32	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	0	0	0	0	0	203	203	203	203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	5.20E+05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	866	0	0	0	0	0	0	0	0	0	26	26	26	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME	14	0	0	0	0	0	0	0	0	0	13	13	13	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	144.7	0.0	0.0	0.0	184.6	0.0	0.0	329.3

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	52817	0	0	0	67371	0	0	120188

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E13	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period (M)	12.00										12.00	12.00	12.00	12.00															
Period (D)	365	0	0	0	0	0	0	0	0	0	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Required Vol																													
CF	69484	0	0	0	0	0	0	0	0	0	12676	12676	12676	12676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	519530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	203	203	203	203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol																													
CF	408546	0	0	0	0	0	0	0	0	0	22851	22851	22851	22851	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	3054695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	366	366	366	366	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra																													
CF	339062	0	0	0	0	0	0	0	0	0	10175	10175	10175	10175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	2535165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	163	163	163	163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage	Required Vol	Required Vol	Designed Vol	Designed Vol	Extra
Volumes	CF	GALLONS	CF	GALLONS	CF
Total	120188	519530	499948	3054695	379760

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0 ac

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled

Type	UNITS	Volume
LIQUID	GAL	1,087,774
SOLID	TONS	811

(MANURE & PRECIP)

APPLICATION INFROMATION

TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID	600	GAL	60	1813	31
SOLID	400	bu	2	104	52

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E13	0	0	0	0	0%	0	0%	0	0	51	52	53	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Working	69483.772	0	0	0	0	0	0	0	0	0	12676.16	12676.158	12676.16	12676.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	38069.571	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0			
24 hr storm	57624	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0			
Precip	75998.95	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0			
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	163176	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0			
Freeboard	225576	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0			
Total	969000	0	0	0	0	0	0	0	0	0	12676	12676	12676	12676	0	0	0	0	0	0	0	0	0	0	0	0			
Gal to Haul	1087774.3	0	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	-		
Tons to Haul	-	-	-	-	-	0	0	0	0	0	203	203	203	203	0	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	1087774	0	0	0	0											0	0	0	0	0	0	0	0	0	0	0			
Annual tons						0	0	0	0	0	203	203	203	203	0												0	0	0

S:\238\2008 project numbers\238-08012A (Cold Springs Farm CNMP)\Section 4 (Manure Wastewater)\MSI Calculations\AWM 2009-08-24\2009-08-24 MSI AWM V 11.0 50s.xls

MAURER & STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - 60's
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Animal Data

	Animals	Actual Quantity	Actual Weight lbs	ASAE D384.2 Manure cf/d-a	ASAE D384.2 Weight lbs	Manure cf/d/AU	Manure CF/day	VS lbs/d/AU	VS lbs/day	TS lbs/d/AU	TS lbs/day	AU
1	Earth Lot	140	639	0.55	1000	0.55	49.2	3.40	304.2	11.00	984.1	89.5
2	Earth Lot	120	639	0.55	1000	0.55	42.2	3.40	260.7	11.00	843.5	76.7
3	Earth Lot	100	639	0.55	1000	0.55	35.1	3.40	217.3	11.00	702.9	63.9
4	Earth Lot	80	639	0.55	1000	0.55	28.1	3.40	173.8	11.00	562.3	51.1
5				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
6				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
7				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
8				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
9				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
	Total	440					155		956		3093	281

Rainfall Data	
County, State	JoDaviess, Illinois
Precip for storage period	23.0 in
Annual Lake Evap	32.5 in
% Evap for storage period	78%
1 Yr 2 Hr Storm Event	1.52 in
2 Yr 24 Hr Storm Event	3.11 in
25 Yr 24 Hr Storm Event	5.6 in
Storage Period	6.0 Months
VS Loading Rate	
ODOR Loading Rate	

Rainfall Data (Indiana Only)	
Location	JoDaviess, Illinois
50 Yr 24 Hr Storm Event	6.5 in
IDEM 50 Yr 24 Hr Storm	6.0 in
Greater of Storm Events	6.5 in

Rainfall Data (NPDES)	
Location	JoDaviess, Illinois
100 Yr 24 Hr Storm Event	7.4 in

Location Data

Animals	Holding Pond E14	Holding Pond E15	Covered Stack	Uncovered Stack 61	Uncovered Stack 62	Uncovered Stack 63	Uncovered Stack 64	Rect. Tank	Circular Tank	Pasture	Settling Basin
1: Earth Lot	4%			96%							
2: Earth Lot	4%				96%						
3: Earth Lot	4%					98%					
4: Earth Lot	4%						96%				
Parlor											
Sprinkler Waters											
Silage leach											
Other											
Solid Removal											
Lagoon treat											
Runoff		100%									
25Y Runoff		100%									
Solid Stored											
Wash Water											
Flush Water											
Bedding											
50Y Runoff											

*Values calculated above are based on data from the Livestock Waste Facilities Handbook

MAURER & STUTZ, INC. ENGINEERS SURVEYORS

PROJECT Cold Springs Farms - 60's
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	E14	E15	0	0	0	0%	0	0%	0	0	61	62	63	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	6.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.23	40.49	33.74	26.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	0.00	847.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	6.19	847.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.23	40.49	33.74	26.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	2258	309354	0	0	0	0	0	0	0	0	17241	14778	12315	9852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	32	32	32	32	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	0	0	0	0	0	276	236	197	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	1.69E+04	2.31E+06	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	29	3856	0	0	0	0	0	0	0	0	35	30	25	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME	0	64	0	0	0	0	0	0	0	0	18	15	13	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	154.6	0.0	0.0	0.0	847.5	0.0	0.0	1002.2

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	56443	0	0	0	309354	0	0	365797

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E14	E15	0	0	0	0%	0	0%	0	0	61	62	63	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period (M)	12.00	6.00									12.00	12.00	12.00	12.00															
Period (D)	365	180	0	0	0	0	0	0	0	0	365	365	365	365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Required Vol																													
CF	2258	152558	0	0	0	0	0	0	0	0	17241	14778	12315	9852	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	16881	1140676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	276	236	197	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol																													
CF	14918	169420	0	0	0	0	0	0	0	0	108291	93631	84731	81971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	111542	1266751	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	1733	1498	1356	1312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra																													
CF	12660	16862	0	0	0	0	0	0	0	0	91050	78853	72416	72119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	94661	126075	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	1457	1262	1159	1154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage Volumes	Required Vol CF	Required Vol GALLONS	Designed Vol CF	Designed Vol GALLONS	Extra CF
Total	209001	1157557	552960	1378293	343960

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0 ac

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled		
Type	UNITS	Volume
LIQUID	GAL	3,000,335
SOLID	TONS	867
(MANURE & PRECIP)		

APPLICATION INFROMATION

TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID	600	GAL	50	5001	84
SOLID	400	bu	2	110	55

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E14	E15	0	0	0	0%	0	0%	0	0	61	62	63	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Working	2257.7148	152557.96	0	0	0	0	0	0	0	0	17240.73	14777.77	12314.81	9851.846	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	0	112474.96	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
24 hr storm	5571.0667	31841.25	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Precip	5494.2317	44203.658	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	0	34296	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Freeboard	9316	116428.5	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Total	35300	508664.06	0	0	0	0	0	0	0	0	17241	14778	12315	9852	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gal to Haul	57961.304	1471186.6	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-	
Tons to Haul	-	-	-	-	-	0	0	0	0	0	276	236	197	158	0	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	57961.304	2942373.3	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0		
Annual tons						0	0	0	0	0	276	236	197	158	0													0	0	0

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MAURER ▲ STUTZ, INC.
ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - 100s
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO.: 1
CHECKED BY: DATE: OF: 1

Subject: Animal Waste Produced

Animal Data

	Animals	Actual Quantity	Actual Weight lbs	ASAE D384.2 Manure cf/d-a	ASAE D384.2 Weight lbs	Manure cf/d/AU	Manure CF/day	VS lbs/d/AU	VS lbs/day	TS lbs/d/AU	TS lbs/day	AU
1	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
2	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
3	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
4	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
5	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
6	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
7	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
8	Earth Lot	70	766	0.55	1000	0.55	29.5	3.40	182.3	11.00	589.8	53.6
9				0.00	0	0.00	0.0	0.00	0.0	0.00	0.0	0.0
	Total	560					236		1458		4719	429

Rainfall Data

County, State	JoDaviess, Illinois
Precip for storage period	23.4 in
Annual Lake Evap	32.5 in
% Evap for storage period	54%
1 Yr 2 Hr Storm Event	1.52 in
2 Yr 24 Hr Storm Event	3.11 in
25 Yr 24 Hr Storm Event	5.6 in
Storage Period	9.0 Months
VS Loading Rate	
ODOR Loading Rate	

Rainfall Data (Indiana Only)

Location	JoDaviess, Illinois
50 Yr 24 Hr Storm Event	6.5 in
IDEM 50 Yr 24 Hr Storm	6.0 in
Greater of Storm Events	6.5 in

Location Data

Animals	Holding Pond E11	Holding Pond E12	Covered Stack	Uncovered Stack E1A-D	Uncovered Stack E1E-H	Rect. Tank	Circular Tank	Pasture	Settling Basin
1: Earth Lot	4%			96%					
2: Earth Lot	4%			96%					
3: Earth Lot	4%			96%					
4: Earth Lot	4%			96%					
5: Earth Lot		4%			96%				
6: Earth Lot		4%			96%				
7: Earth Lot		4%			96%				
8: Earth Lot					96%				
Parlor									
Sprinkler Waters									
Silage leach									
Other									
Solid Removal									
Lagoon treat									
Runoff	42%	58%							
25Y Runoff	42%	58%							
Solid Stored									
Wash Water									
Flush Water									
Bedding									
50Y Runoff									

*Values calculated above are based on data from the Livestock Waste Facilities Handbook

MAURER ▲ STUTZ, INC. ENGINEERS SURVEYORS

PROJECT: Cold Springs Farms - 100s
PROJECT NO.: 238-08012A
COMPUTATION BY: JEO DATE: 8/25/09 SH. NO: 1
CHECKED BY: _____ DATE: _____ OF: 1

Subject: Animal Waste Produced

Facility Volumes (CF/day)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Facility	E11	E12	0	0	0	0%	0	0%	0	0	E1A-D	E1E-H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solids Remov	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Manure	4.72	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.25	113.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wash	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flush	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bedding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Runoff	163.95	226.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Store	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily Vol	168.67	229.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	113.25	113.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual Vol	61563	83930	0	0	0	0	0	0	0	0	41335	41335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Density lb/cf	0	0	0	0	0	50	50	50	50	50	62	62	60	60	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Tons	0	0	0	0	0	0	0	0	0	0	661	661	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Annual Gal	4.60E+05	6.28E+05	0.00E+00	0.00E+00	0.00E+00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# LOADS	768	1046	0	0	0	0	0	0	0	0	84	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TIME	13	17	0	0	0	0	0	0	0	0	42	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF/d	234.7	0.0	0.0	0.0	390.4	0.0	0.0	625.1

Annual Manure & Wates Water Volumes

Facility	Manure	Wash	Flush	Bedding	Runoff	Solids Rem	Solids Sto	Total V
Total CF	85683	0	0	0	142479	0	0	228162

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E11	E12	0	0	0	0%	0	0%	0	0	E1A-D	E1E-H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Period (M)	9.00	9.00									12.00	12.00																	
Period (D)	270	270	0	0	0	0	0	0	0	0	365	365	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Required Vol																													
CF	45540	62085	0	0	0	0	0	0	0	0	41335	41335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	340503	464208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	661	661	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Designed Vol																													
CF	53331	70444	0	0	0	0	0	0	0	0	131211	131211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	398753	526709	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	2099	2099	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extra																													
CF	7791	8359	0	0	0	0	0	0	0	0	89877	89877	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GALLONS	58250	62501	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONS	0	0	0	0	0	0	0	0	0	0	1438	1438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Storage	Required Vol	Required Vol	Designed Vol	Designed Vol	Extra
Volumes	CF	GALLONS	CF	GALLONS	CF
Total	190294	804712	386197	925462	195903

	AVAILABLE	REQUIRED
PASTURE 1 ACRES		0.0 ac

(FIGURES 0.25 IN COVER ON ENTIRE PASTURE)

Annual Storage Volumes Hauled

Type	UNITS	Volume
LIQUID	GAL	1,860,707
SOLID	TONS	1,323

(MANURE & PRECIP)

APPLICATION INFROMATION

TYPE	SIZE	UNITS	LOAD/HR	# LOADS	TIME
LIQUID	600	GAL	40	3102	52
SOLID	400	bu	2	168	84

Storage Volumes (CF/Period)

	Holding Pond					Covered Stack					Uncovered Stack					Rect. Tank							Circular Tank				Pasture	Settling Basin	
Storage	E11	E12	0	0	0	0%	0	0%	0	0	E1A-D	E1E-H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Working	45540.079	62084.84	0	0	0	0	0	0	0	0	41334.59	41334.586	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr runoff	41181.991	56870.368	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
24 hr storm	19208	23391.667	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Precip	38126.209	40891.955	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Treatment	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residuals	33816	44186	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Freeboard	69336	85466	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0		
Total	255000	321250	0	0	0	0	0	0	0	0	41335	41335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gal to Haul	625572.83	769957.5	0	0	0	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-	
Tons to Haul	-	-	-	-	-	0	0	0	0	0	661	661	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Annual gal	834097.11	1026610	0	0	0											0	0	0	0	0	0	0	0	0	0	0	0		
Annual tons						0	0	0	0	0	661.3534	661.35337	0	0	0													0	0	0

S:\238\nab08_project_numbers\238-08012A (Cold Springs Farm CAFO)\Section 4 (Manure, Wastewater)\MS Calculations\AWM 2009-08-24 MST AWM V 11.0 100s.xls